

## The Development of an Accident Causation Model Specific to Agriculture: The Irish Farm Accident Causation Model

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**Abstract :** The agricultural industry in Ireland and worldwide is one of the most dangerous occupations with respect to occupational health and safety accidents and fatalities. Many accident causation models have been developed in safety research to understand the underlying and contributory factors that lead to the occurrence of an accident. Due to the uniqueness of the agricultural sector, current accident causation theories cannot be applied. This paper presents an accident causation model named the Irish Farm Accident Causation Model (IFACM) which has been specifically tailored to the needs of Irish farms. The IFACM is a theoretical and practical model of accident causation that arranges the causal factors into a graphic representation of originating, shaping, and contributory factors that lead to accidents when unsafe acts and conditions are created that are not rectified by control measures. Causes of farm accidents were assimilated by means of a thorough literature review and were collated to form a graphical representation of the underlying causes of a farm accident. The IFACM was validated retrospectively through case study analysis and peer review. Participants in the case study (n=10) identified causes that led to a farm accident in which they were involved. A root cause analysis was conducted to understand the contributory factors surrounding the farm accident, traced back to the 'root cause'. Experts relevant to farm safety accident causation in the agricultural industry have peer reviewed the IFACM. The accident causation process is complex. Accident prevention requires a comprehensive understanding of this complex process because to prevent the occurrence of accidents, the causes of accidents must be known. There is little research on the key causes and contributory factors of unsafe behaviours and accidents on Irish farms. The focus of this research is to gain a deep understanding of the causality of accidents on Irish farms. The results suggest that the IFACM framework is helpful for the analysis of the causes of accidents within the agricultural industry in Ireland. The research also suggests that there may be international applicability if further research is carried out. Furthermore, significant learning can be obtained from considering the underlying causes of accidents.

**Keywords :** farm safety, farm accidents, accident causation, root cause analysis

**Conference Title :** ICASW 2023 : International Conference on Agricultural Safety and Wellness

**Conference Location :** Miami, United States

**Conference Dates :** March 16-17, 2023